

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-283336
(43)Date of publication of application : 29.10.1993

(51)Int.Cl. H01L 21/20
H01L 21/203
H01L 21/363

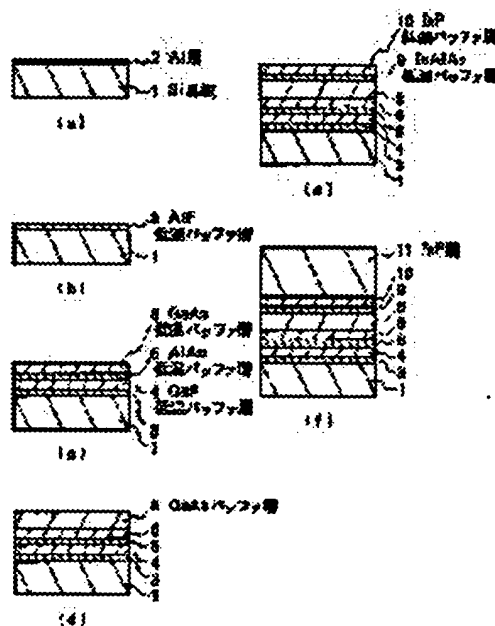
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(54) FORMATION OF COMPOUND SEMICONDUCTOR LAYER

(57)Abstract:

PURPOSE: To form a group III-V semiconductor epitaxial layer of high quality and good surface flatness on a single crystal of non-polar or different lattice constant.

CONSTITUTION: An Al layer 2 of one atomic layer is formed on an Si substrate 1 at a low temperature of 400° C or below and then P is supplied successively. The processes are repeated to form an Al P low temperature buffer layer 3. A GaP low temperature buffer layer 4, an AlAs low temperature buffer layer 5 and a GaAs low temperature buffer layer 6 are made to grow one by one thereon by a similar alternate supply method. A temperature is made to rise while supplying As and a GaAs buffer layer 8 is formed by an ordinary simultaneous supply method. Then, a temperature is lowered and an InAlAs low temperature buffer layer 9 and an InP low temperature buffer layer 10 are made to grow one by one by the alternate supply method. Thereafter, a temperature is made to rise while supplying P and an InP layer 11 is formed by the simultaneous supply method. Since two dimensional growth from an initial stage can be thereby acquired even on a single crystal of non-polar or different lattice constant, interface defective density can be reduced and dislocation due to thermal strain can be restrained from rising again.



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[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]